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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,818	03/31/2005	Hiroshi Matsui	Q87174	5691

23373 7590 12/24/2009

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EXAMINER	
MOWLA, GOLAM	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
12/24/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/529,818	MATSUI ET AL.	
	Examiner	Art Unit	
	GOLAM MOWLA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,27-31 and 34* is/are pending in the application.

4a) Of the above claim(s) *3,4,30 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6,27-29 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/12/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

Election/Restrictions

1. Claims 3-4 and 30-31, as amended, directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claims are directed to a production method of the photoelectric conversion element, which is distinct from the original filed claims (the original claims are directed to a photoelectric conversion element). The product as claimed can be manufactured by sputtering, besides instant claimed printing method.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 3-4 and 30-31 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Amendment

2. Applicant's amendment of 10/16/2009 does not place the Application in condition for allowance.

3. Claims 1-4, 6, 27-31 and 34 are currently pending. Applicant has amended claims 1-4, 6, 27-31 and 34, and cancelled claims 5, 7-26 and 32-33. Claims 3-4 and 30-31 withdrawn from consideration as being part of non-elected invention.

Status of the Objections or Rejections

4. Due to Applicant's amendment of claims 1-4, 6, 27-31 and 34, all rejections from the office Action dated 06/18/2009 are withdrawn. However, upon further consideration, a new ground(s) of rejection is/are presented below.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurth (WO00/48212, refer to US 6462266 for translation) in view of Yoshikawa (US 2002/0040728 A1).

Regarding claims 1-2 and 6, Kurth discloses a photovoltaic cell (1) (fig. 1, 2:26-3:3 and 4:53-63), which reads on instant photoelectric conversion element or dye-sensitized solar cell, comprising:

- an electrode substrate, comprising a base material (support pane 2), a metal circuit layer (conductor lead 7) that is provided on the base material (2), and a transparent conductive layer (conductor layer 5) that is electrically connected to the metal circuit layer (7), wherein the metal circuit layer (7) is covered by an insulating layer (insulating coating 10) that includes a glass component (glass coating 10) (col. 2, line 45);
- a counter electrode (conductive layer 6), which has a different constitution form the electrode substrate (counter electrode is formed of a single layer 6 whereas electrode substrate is made of plurality of layers, and therefore

has a different constitution) and which is formed of film made of a conductive material (2:33-35) formed on a substrate (support pane 3), and which is placed facing a oxide semiconductor film which is placed between electrode substrate (combination of layers 2+5+7+10) and counter electrode (6) (inherent characteristics feature of a photovoltaic cell); and

- an electrolyte layer or charger transfer layer (col. 4, lines 53-63) that is provided between the counter electrode (6) and the electrode substrate (combination of layers 2+5+7+10) (one of ordinary skill in the art realizes that the electrolyte layer is inherently placed between the electrode substrate and counter electrode).

The dye-sensitized solar cell (1) of Kurth inherently has a semiconductor which is provided between the electrode substrate (combination of layers 2+5+7+10) and counter electrode (6). However Kurth does not explicitly show a semiconductor porous film that is provided on a side of the electrode substrate above which the transparent conductive layer side is provided, and a sensitizing dye that is provided in the semiconductor porous film, and whether the semiconductor porous film is formed above the electrolyte layer.

Yoshikawa discloses a photoelectric conversion element or dye sensitized solar cell (see fig. 1-10) ([0069]) comprising an electrode substrate (50a and 10a), a counter electrode (40a) on a substrate (50a), a porous semiconductor film (20) ([0085]), a sensitizing dye (22) in the oxide semiconductor porous film (20) (see fig. 1) ([0069]), and

an electrolyte (30) adjacent to the oxide semiconductor porous film (20) provided between the counter electrode (40a) and the electrode substrate (50a and 10a) above which oxide semiconductor porous film (20) is formed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the configuration and the dye-sensitized semiconductor porous film of Yoshikawa in the solar cell of Kurth in order to form the porous semiconductor film and the electrolyte layer above the electrode substrate and between the electrode substrate and counter electrode in order to allow for a device that exhibits excellent conversion efficiency, as taught by Yoshikawa ([0004-0005]).

7. Claims 27-29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurth (WO00/48212, refer to US 6462266 for translation) in view of Yoshikawa (US 2002/0040728 A1), and further in view of Mohri et al (US 4396682).

Regarding claim 27-29 and 34, Kurth discloses a photovoltaic cell (1) (fig. 1, 2:26-3:3 and 4:53-63), which reads on instant photoelectric conversion element or dye-sensitized solar cell, comprising:

- an electrode substrate, comprising a base material (support pane 2), a metal circuit layer (conductor lead 7) that is provided on the base material (2), and a transparent conductive layer (conductor layer 5) that is electrically connected to the metal circuit layer (7), wherein the metal circuit layer (7) is covered by an insulating layer (insulating coating 10) that includes a glass component (glass coating 10) (col. 2, line 45);

- a counter electrode (conductive layer 6), which has a different constitution form the electrode substrate (counter electrode is formed of a single layer 6, whereas electrode substrate is made of plurality of layers and therefore has a different constitution) and which is formed of film made of a conductive material (2:33-35) formed on a substrate (support pane 3), and which is placed facing a oxide semiconductor film which is placed between electrode substrate (combination of layers 2+5+7+10) and counter electrode (6) (inherent characteristics feature of a photovoltaic cell); and
- an electrolyte layer or charger transfer layer (col. 4, lines 53-63) that is provided between the counter electrode (6) and the electrode substrate (combination of layers 2+5+7+10) (one of ordinary skill in the art realizes that the electrolyte layer is inherently placed between the electrode substrate and counter electrode).

The dye-sensitized solar cell (1) of Kurth inherently has a semiconductor which is provided between the electrode substrate (combination of layers 2+5+7+10) and counter electrode (6). However Kurth does not explicitly show a semiconductor porous film that is provided on a side of the electrode substrate above which the transparent conductive layer side is provided, and a sensitizing dye that is provided in the semiconductor porous film, and whether the semiconductor porous film is formed above the electrolyte layer.

Yoshikawa discloses a photoelectric conversion element or dye sensitized solar cell (see fig. 1-10) ([0069]) comprising an electrode substrate (50a and 10a), a counter electrode (40a) on a substrate (50a), a porous semiconductor film (20) ([0085]), a sensitizing dye (22) in the oxide semiconductor porous film (20) (see fig. 1) ([0069]), and an electrolyte (30) adjacent to the oxide semiconductor porous film (20) provided between the counter electrode (40a) and the electrode substrate (50a and 10a) above which oxide semiconductor porous film (20) is formed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the configuration and the dye-sensitized semiconductor porous film of Yoshikawa in the solar cell of Kurth in order to form the porous semiconductor film and the electrolyte layer above the electrode substrate and between the electrode substrate and counter electrode in order to allow for a device that exhibits excellent conversion efficiency, as taught by Yoshikawa ([0004-0005]).

Kurth further discloses that the insulating layer coating comprises glass coating (col. 2, line 45). However, the reference is silent as to whether the insulating layer coating includes at least one of alumina, zirconia and silica heat-resistant ceramic, and whether the insulating layer contains at least one of silicate, phosphate, colloidal silica, alkyl silicate, and metal alkoxide.

Mohri teaches an insulating layer (glazed ceramic substrate) for use in electronic device comprises a heat-resistant ceramic (alumina) as a main component and further includes colloidal silica (SiO_2) (see abstract, and col. 2, line 26 to col. 3, line 55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the insulating coating layer of Mohri in the solar cell of Kurth in view of Yoshikawa because the insulating layer of Mohri has excellent high-temperature stability (see abstract of Mohri), and also selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Response to Arguments

8. Applicant's arguments with respect to claims 1-4, 6, 27-31 and 34 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the amendments.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence/Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-F, 0900-1700 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JENNIFER MICHENER can be reached on (571) 272-1424 until Dec 31, 2009, or ALEXA NECKEL can be reached on (571) 272-1446 from January 2009, onwards. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./

Examiner, Art Unit 1795

/Jennifer K. Michener/
Supervisory Patent Examiner, Art Unit 1795